# Energy Policy Update

**Energy and Environmental News**
**May 16, 2011**

ARIZONA COMMERCE AUTHORITY

This newsletter is published by the Arizona Commerce Authority Energy Office and is provided free of charge to the public. It contains verbatim excerpts from international and domestic energy and environment-related publications reviewed by the Education and Community Outreach personnel. For inquiries, call **(602) 771-1143** or toll free **(800) 352-5499**. Compiled and edited by Gloria Castro, Special Projects Coordinator. To register to receive this newsletter electronically, email Gloria Castro.

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**FOR YOUR CONVENIENCE, ARIZONA-RELATED TITLES ARE HIGHLIGHTED IN BLUE**

## ARIZONA

### APS Achieves Record Year for Renewable Energy

[Business Wire News Releases, May 10] In 2010, customers of Arizona Public Service Company received record amounts of renewable energy, enough to surpass Arizona's energy goals for the third straight year. Renewables powered more than 3 percent of all customer electric needs last year – on track to 10 percent from renewables by 2015 and 15 percent by 2025. According to a company report filed each year with the Arizona Corporation Commission, last year customers received 826,534 megawatt-hours of renewable energy, 26 percent more than the previous year.

### APS Plans to Test Taking Control of Customers' Thermostats to Save Electricity

[Arizona Republic, May 12] This fall, Arizona Public Service Co. will test whether taking control of customers' air-conditioning thermostats and a host of other conservation programs are cost effective. The Arizona Corporation Commission approved the APS Home Energy Information Pilot in February, and the utility now will seek about 800 customers to volunteer for the test. Some customers will test devices that show them, in real time, how much electricity is being used at their home. The point of that will be to show customers when their appliances are costing the most to run and encourage them to conserve. Other customers will allow APS to assume control of their thermostat, using the wireless technology embedded in the new "smart meters" that APS and other utilities have been installing on homes. About 600,000 APS customers have the meters.

### Benson Move to Benefit Energy Co-Ops

[Arizona Daily Star, May 12] An Indiana-based company will partner with Arizona Electric Power Cooperative (AEPCO) to help co-op members buy and sell energy. ACES Power Marketing, an energy risk-management firm, has opened a Western regional trading center at AEPCO's headquarters in Benson, the generating co-op said. Nine AEPCO power-trading employees will move to the new trading center and become employees of ACES. In return, ACES has modified an existing service agreement with AEPCO to provide electricity and natural gas trade-execution services. The arrangement will help member co-ops by making energy trading more efficient and sophisticated, AEPCO chief executive Patrick Ledger said in a news release. Utilities buy and sell power to match available resources to expected demand. They also hedge power and fuel price risk through strategies including forward purchase contracts and options.

### First Solar on Track to Win Federal Loan Guarantees for Three Big Projects

[Forbes, May 12] The check's not quite in the mail but First Solar, the thin-film photovoltaic panel maker and developer, said Thursday that it is on track to secure federal loan guarantees for three huge photovoltaic power plant projects in California. First Solar said it has received letters from the United States Department of Energy's Loan Programs Office stating that its applications were moving forward for the trio of projects that if built would generate 1,330 megawatts of carbon-free electricity. (At peak output, that's as much electricity as produced by a big nuclear or coal-fired power plant.) First Solar has not disclosed how much money it is seeking, and in the letters Jonathan Silver, the loan program's executive director, stressed that there was no guarantee, as it were, that the Tempe, Ariz., company would ultimately win the loans. But given First Solar's track record, it would

appear to stand a good chance of obtaining the government cash, which have become crucial to getting big renewable projects built. For instance, the company in January received an offer of a $967 million federal loan guarantee to finance the construction of the 290-megawatt Agua Caliente photovoltaic power plant in Arizona that will sell electricity to California utility Pacific Gas & Electric. First Solar said Tuesday it expects the loan and the previously announced sale of Agua Caliente to NRG Energy to close in the second or third quarter of this year.

### Global Solar Vaults to Production Top 10

[Arizona Daily Star, May 9] A 450 percent increase in production vaulted Tucson-based Global Solar Energy Inc. into the ranks of the world's top 10 producers of thin-film photovoltaic cells in 2010, according to the industry magazine Photon International. Global Solar ranked 16th in 2009. The world's biggest thin-film maker, First Solar Inc., is based in Tempe.

### Plans for Golden Valley Solar Plant Move Forward

[Kingman Daily Miner, May 12] The Mohave County Planning and Zoning Commission approved a new solar plant near Black Mountain Generating Station in Golden Valley Wednesday. The request came from Tucson-based Solon, Inc. The 15-megawatt plant would be built on Yuma Road in Golden Valley south of Black Mountain Generating Power Plant and southeast of the Arizona State Prison. According to information provided to the commission, the plant will be built in phases with the first phase consisting of 21,000 modules built on 32 acres that will generate 5-megawatts of power. The power will be put on the local grid through a UniSource power line. It is expected to take between three to four months of construction to build the plant, and Solon has pledged to use local labor. The item will go before the Board of Supervisors in June.

### Recycling Mine Tailings Project Could Become Billion-Dollar Industry in Arizona

[Inside Tucson Business, May 5] At first glance, Lianyang Zhang's research premise seems so obvious it can't fail. He's the scientist at the University of Arizona experimenting with recycling mine tailings into construction materials to build roads, bridges and other structures. If the process becomes commercially viable, it has the potential to launch a billion dollar industry in Arizona - a new "gold mine of commerce" from rocky waste. "The process is practical and feasible, but there are huge obstacles. The devil is in the details of the big picture because this would change the entire paradigm of construction," said Kurtis Harris, an environmental coordinator for the Arizona Department of Transportation. Based on two years of research, Zhang has concluded that mine tailings could be used to make construction materials using geopolymerization technology. Basically, geopolymerization is a chemical reaction that creates a "paste" that bonds with mine tailings and fly ash. Zhang is an assistant professor at the University of Arizona Civil Engineering Department. If the project becomes a commercial venture, "somehow, everyone would have to get a win out of it," said Harris. "In northern Arizona, we have coal-burning power plants and fly ash. We have mines in central and southern Arizona. If a central mixing plant is constructed, the most practical way to deliver the tailings and ash is by rail." In any large transportation-related construction project, such as freeways, bridges, sidewalks and road widenings, transporting cement to the site is costly. A centrally located mixing plant could reduce delivery costs. A more economical option, Harris suggested, might be having the mines and power plants build mixing plants on site.

### Solar Plant Proposal Draws Concerns

[San Pedro Valley News-Sun, May 10] Despite objections from members of the public, the city's planning and zoning commission recommended a zoning change during its May 3 meeting that could, if approved by the Benson City Council on May 23, pave the way for a massive solar plant and data center south of Benson. The commission's rezoning recommendation involves four sections of land belonging to Ernie Graves, who introduced himself as a representative of Whetstone Partners LLC. If approved by the City, the rezoning will change the four parcels from the current residential (R-1 and R-3) use to light industrial. The property, located south of the developments on the east side of State Route 90, is accessed by turning east on Post Road, a dirt road between mile markers 294 and 295 off 90.

### Solar Pavilion Installed at Tempe Beach Park

[KPHO.com website, May 11] Tempe Beach Park can get pretty hot in the summer, and now the sunlight will get put to good use by supplying some of the park's energy needs. Arizona Public Services has just installed more than 50 new solar panels at the park, providing 20,000 kilowatt-hours of energy. That electricity will power the ball field, park lights and splash playground pump. APS chose to install the solar panel pavilion there because more than 1 million people visit the park each year.

### Wind Farm Takes Shape on Route 66 Southeast of Kingman

[Kingman Daily Miner, May 10] Rapid progress is being made on the first wind farm in the Kingman area. Western Wind Energy Corporation started putting up the support columns for five 350-foot tall wind turbines and 500-megawatt solar panels on more than 800 acres behind Nucor Steel on Route 66, southeast of Kingman last week.

The tall columns can be seen from the top of El Trovatore Hill. The $24 million project is one of a few projects in the United States that combines both solar and wind energy, said Mike Boyd, executive vice president of development for Western Wind Energy. It is the second wind project to be built in the Arizona. The first is in the Snowflake area.

## ALTERNATIVE ENERGY AND EFFICIENCY

### DOE Announces Guide for 50% More Energy Efficient Office Buildings

[U.S. DOE - EERE website, May 11] The U.S. Department of Energy today announced the release of the first in a new series of Advanced Energy Design Guides (AEDGs) to aid architects and engineers in the design of highly energy efficient office buildings. The 50 % AEDG series will provide a practical approach to commercial buildings designed to achieve 50 % energy savings compared to the commercial building energy code used in many areas of the country. This 50 % AEDG for Small and Medium Office Buildings is the first in a series of four to be released in the coming months. These commercial building guides support President Obama's goal to reduce energy use in commercial buildings 20 % by 2020 and will help drive demand for energy-saving products made in the United States.

### Green Energy from City Skylines

[Medill Reports: Chicago, May 12] While large wind and solar farms catch grief from nearby residents, engineers and designers have created ways to incorporate renewable energy systems into city skylines, including Chicago's. Across the United States, renewable energy developers are supplementing energy grids more discreetly, more affordably and on an urban-friendly scale. In New Jersey, Petra Solar Inc. and Public Service Electric and Gas Co., the garden state's largest utility, have been working together to install 200,000 solar panels on neighborhood telephone poles, and along highways and parking structures. "It might not seem like a lot if you look at one unit, but it's like looking at ants," said John Enslin, chief technology officer of Petra Solar. "If you look at one at a time, they seem tiny, but they build up into a large population." The entire project produces 40 megawatts of power each hour for four to five hours a day, or 58,400 megawatt-hours per year, according to Enslin. The installation is the largest "distributed" or decentralized solar electric project being deployed in the world today, he added.

### NREL's Multi-Junction Solar Cells Teach Scientists How to Turn Plants into Powerhouses

[NREL website, May 12] Plants can overcome their evolutionary legacies to become much better at using biological photosynthesis to produce energy, the kind of energy that can power vehicles in the near future, an all-star collection of biologists, physicists, photochemists, and solar scientists has found. A U.S. Department of Energy (DOE) workshop that drew a prestigious collection of 18 scientists to compare the efficiency of plants and photovoltaic solar cells led to an important and provocative scholarly article in today's issue of the journal Science. Two of the scientists are from DOE's National Renewable Energy Laboratory (NREL), Arthur J. Nozik and Maria Ghirardi. Titled"Comparing Photosynthetic and Photovoltaic Efficiencies and Recognizing the Potential for Improvement," the article combines lessons learned from evolutionary photobiology and modern solar cells to make the case for a potentially huge boost in the efficiency of the solar production of biofuels.

## ENERGY/GENERAL

### Disaster Plan Problems Found at U.S. Nuclear Plants

[New York Times, May 12] Rockville, MD - Despite repeated assurances that American nuclear plants are better equipped to deal with natural disasters than their counterparts in Japan, regulators said Thursday that recent inspections had found serious problems with some emergency equipment that would have made it unusable in an accident. In addition, the staff of the Nuclear Regulatory Commission acknowledged that the agency's current regulations and disaster plans did not give enough consideration to two factors that had greatly contributed to the continuing Fukushima Daiichi crisis in Japan: simultaneous problems at more than one reactor and a natural disaster that disrupts roads, electricity and other infrastructure surrounding a plant. The briefing was part of a review requested by the commissioners to evaluate the vulnerability of American reactors to severe natural disasters like the ones that hit the Japanese plant in March.

### Energy Agency Sees Slowdown in Oil Demand

[New York Times, May 12] PARIS — The International Energy Agency on Thursday cut its forecast for crude oil demand next year as a result of the recent surge in petroleum prices and weakening growth prospects for industrialized countries. In its monthly report, the agency, an adviser to industrialized nations, trimmed its full-year 2011 global oil demand estimates to 89.2 million barrels a day, 190,000 fewer barrels than its previous estimate. That would still be 1.5 percent more than 87.9 million barrels in 2010. The agency said it acted because of "persistent high prices" and weaker projections for advanced economies by the International Monetary Fund.

### Gas Prices Expected to Drop 50 Cents by Summer

[Associated Press, May 7]) — Some relief from suffocating gas prices will likely arrive just in time for summer vacation. Expect a drop of nearly 50 cents as early as June, analysts say. After rocketing up 91 cents since January, including 44 straight days of increases, the national average this past week stopped just shy of $4 a gallon and has retreated to under $3.98. A steady decline is expected to follow. It might not be enough to evoke cheers from people who recall gas stations charging less than $3 a gallon last year. But it would still ease the burden on drivers. And it might help lift consumer spending, which powers

### NREL Highlights 2010 Utility Green Power Leaders

*New, innovative community programs support local power generation*

[NREL website, May 9] Golden, CO - The U.S. Department of Energy's (DOE) National Renewable Energy Laboratory today released its annual assessment of leading utility green power programs. Under these voluntary programs, consumers can choose to help support additional electricity production from renewable resources such as wind and solar. Green power sales from utility programs exceeded 6 million megawatt-hours (MWh) in 2010. Wind energy now represents more than three-fourths of electricity generated for green energy programs nationwide. Using information provided by utilities, NREL has developed "Top 10" rankings of utility green power programs for 2010 in the following categories: total sales of renewable energy to program participants, total number of customer participants, the percentage of customer participation, green power sales as a percentage of total utility retail electricity sales, and the lowest price premium charged for a green power program using new renewable resources. According to NREL, more than 850 utilities across the United States offer green power programs.

## LEGISLATION AND REGULATION

### Administration Reports on Public-Lands Energy Initiatives

[Drovers CattleNetwork, May 10] The Departments of Interior and Agriculture this week issued a report to Congress, titled *New Energy Frontier – Balancing Energy Development on Federal Lands*, outlining progress in developing renewable and conventional energy sources on public lands and waters. Traditional oil and gas resources produced from Federal lands and waters presently account for about 30 percent of the U.S. energy production. The report notes that 38.2 million acres of onshore public lands currently are under lease for oil and gas development, but only 16.6 million acres are active while 21.6 million acres are inactive.

### Federal Loans for Energy Projects Drying Up

[Desert Dispatch, May 12] The Department of Energy announced earlier this week that it will only be considering loans for renewable energy projects that have the strongest chance of beginning construction before the Sept. 30 deadline this year and have already finished their loan applications. The department has been offering loans to commercial renewable energy projects under its Section 1705 loan guarantee and has given out 19 loan guarantees or conditional commitments that total $11 billion in investment, said Department of Energy Director of Loan Programs Jonathan Silver on the Department of Energy website Tuesday. BrightSource Energy has already received one of the loans for its Ivanpah project. In his posting, Silver said some projects that have already applied for the program will not be able to receive funding this year, but said those applications will be put on hold and may be considered for further loans if there are more funds available in the future. Silver also wrote that some projects may be eligible for a different loan aimed at renewable energy projects — Section 1703 — but commercial projects are ineligible for those funds.

### New National Research Program to Benefit U.S. Dairy Farms

[Dairy Herd Network, May 11] Rosemont, IL - Representatives of the U.S. dairy industry announced an agreement to work jointly with a national energy research laboratory to advance the science and best management practices of renewable energy, environmental stewardship and life cycle analysis of dairy systems and processes. The Innovation Center for U.S. Dairy™, the Dairy Research Institute™ and Idaho's Center for Advanced Energy Studies (CAES) are working to develop a national research program focused on enhancing the economic viability of dairy farms and rural communities.

### Obama Administration Set to Raise Fuel Efficiency Standards, But by How Much?

[Washington Post, May 12] As the first Toyota Priuses took to U.S. roads more than a decade ago and celebrities such as Leonardo DiCaprio and Cameron Diaz touted their virtues, enthusiasts predicted that hybrid cars would quickly become mainstream. But there was a problem: They cost too much, and consumers spurned them. Last year, the vehicles represented less than 3 percent of cars and light trucks sold in the United States. Now the Obama administration is deciding how much to push U.S. drivers into fuel-efficient cars. Over the next few months, regulators are scheduled to set the next round of U.S. fuel economy standards for manufacturers. Among the proposals under consideration is one that would lift average fuel economy under the law to as much as

62 mpg by 2025. The preeminent issue in the debate is how much the price of cars — gas, hybrids, plug-ins or whatever inventors come up with— would rise if regulations dictate such standards. On one side are automakers, which warn that the highest targets could add as much as $10,000 to the price of a new car, devastating a U.S. industry that just two years ago was bailed out by the government. Sales could plummet by 25 percent, they say, and 220,000 auto manufacturing jobs could be lost. Regulators "need to ensure that their standards do not result in vehicles that consumers cannot afford," the Alliance of Automobile Manufacturers, a trade group, warned in a letter this week to officials. On the other side are environmentalists, who dismiss the automakers' cost estimates as bloated and argue that the costs of investing in fuel efficiency are tiny compared with the effects of global warming and dependence on foreign oil. The proposal to raise the standard to 62 mpg, which would translate into "real world" average efficiency of about 45 mpg, is also backed by 17 U.S. senators, who last month issued a letter of support for a "maximum feasible" standard.

### Oil Executives, Defending Tax Breaks, Say They'd Cede Them if Everyone Did

[New York Times, May 13] Washington, D.C. - Executives of five of the largest oil companies on Thursday defended the $2.1 billion they receive each year in tax breaks, but said they would be willing to give them up as part of a comprehensive reform of the tax code. At a three-hour Senate Finance Committee hearing that was largely political theater interrupted occasionally by a serious tax policy discussion, the oil industry executives said their current tax breaks were not subsidies but legitimate tax deductions, shared in some cases with other industries. Rex W. Tillerson, chief executive of Exxon Mobil, said that the provisions, such as a tax deduction for certain types of manufacturing, were not "special incentives, preferences or subsidies for oil and gas, but rather standard deductions applied across all businesses in the United States." He said that eliminating the provision just for the oil industry would be "misinformed and discriminatory." Under questioning from Senator Max Baucus, Democrat of Montana, the panel's chairman, Mr. Tillerson said that he would support repeal of the manufacturing tax credit and other tax incentives, as long as all businesses were treated the same.

## WESTERN POWER

### California Grid May Have Enough Generation to Integrate 33-Percent RPS

[Energy Prospects West, May 10] Other than planned additions to its generating fleet, the California Independent System Operator grid may not need any more generating capacity or new forms of energy storage to integrate 33 percent renewables called for by the state's RPS, according to preliminary results of a Cal-ISO study. Assuming lower loads in 2020 due to energy-efficiency and demand-response programs, expected generation will be able to meet the grid's operational needs to integrate 33 percent renewables, Cal-ISO's Mark Rothleder told Energy Prospects West.

### Los Alamos County Completes Abiquiu Hydropower Project, Bringing New Clean Energy Resources to New Mexico

[U.S. DOE – EERE website, April 21] U.S. Energy Secretary Steven Chu issued the following statement on the completion and startup today of the Abiquiu Hydropower Project in New Mexico – the first hydropower project funded by the American Recovery and Reinvestment Act to be completed nationwide. "Today marks a major milestone in securing America's clean energy future as we celebrate the completion of the Department of Energy's first major Recovery Act-funded water power project. By increasing renewable energy output at existing hydropower facilities, we can create clean energy jobs, bolster our nation's economic competitiveness, and contribute to America's diverse energy portfolio," said Secretary Chu. "The Abiquiu Low-Flow Turbine Hydropower Project highlights the clean energy potential and local economic benefits that come with the environmentally responsible use of our rivers." The project received a $4.5 million Recovery Act grant from the Department of Energy's (DOE's) Wind and Water Power Program, which was leveraged with $4.5 million from the private sector to fully fund the project. The low-flow turbine will increase renewable energy generation capacity by 22 %at the Abiquiu facility – from 13.8 megawatts to 16.8 megawatts. The new turbine will produce enough energy to power 1,100 homes annually and will supply clean energy to Los Alamos County, including DOE's Los Alamos National Laboratory. Hydropower projects at both new and existing facilities will play an important role in meeting President Obama's bold but ambitious goal of generating 80 % of America's electricity from clean energy sources by 2035.

### Oregon Wins Approval for 'Largest Solar Highway Project in the Nation' at Baldock I-5 Rest Area

[The Oregonian, May 12] Oregon City, OR - Clackamas County this week granted the Oregon Department of Transportation approval to install what the state agency has described as the "largest solar highway project in the nation, and the largest solar project at a safety rest area in the world." Once operational, the solar panels at the Baldock rest area along northbound Interstate 5 just south of Wilsonville will produce approximately 1.9 million kilowatt-hours of renewable energy each year, according to ODOT. That would produce more than enough energy to power both the northbound and southbound Baldock rest stops as well as lighting at the nearby I-5 interchange with Oregon 551. A test project using thin-film solar panels could be installed nearby in the future,

ODOT officials said. The project will be the agency's second solar highway project. It will produce substantially more power than the agency's pilot program just a few miles north at the I-5 interchange with Interstate 205. That project generates about 130,000 kilowatt-hours annually. Solar highway projects are intended to meet ODOT's goal of using only renewable energy to power its statewide consumption by 2025.

### Renewable Energy Sources Rose 30 Percent in Texas in 2010

[Power-Gen Worldwide, May 13] Texas reported a 30 percent increase in electricity generated by renewable energy in 2010, according to a renewable energy credits registry administered by the Electric Reliability Council of Texas (ERCOT). The state recorded 28 million MWh of electricity from renewables in 2010. That was up from 21.6 million MWh in 2009. Wind energy had the biggest share at 26.8 million MWh. Solar increased the most by percentage, a 221 percent increase from 4,492 to 14,449 MWh.

### Xcel Says It's Close to Meeting Colorado Target for Renewable Energy

[Denver Business Journal, May 12] Xcel Energy Inc. believes it will substantially meet Colorado's year-old mandate of having 30 percent of its electricity come from renewable sources by the middle of 2012, eight years ahead of the 2020 deadline. And that could mean a slowing of Xcel's rush to build large wind and solar farms in the state, or buy power from such farms, in order to meet the mandate.

## INDUSTRIES AND TECHNOLOGIES

### Best for Batteries: Not Too Hot, Not Too Cold

[NREL, May 13] With average U.S. gasoline prices approaching $4 a gallon, drivers and automakers are thinking electric. Previously steered in this direction by concerns about pollution and dependence on foreign oil, consumer interest in electric-drive cars continues to surge. But before Americans are able to flip the switch from gasoline to electricity, automakers need batteries for the next generation of electric vehicles that can deliver the range, performance, reliability and safety drivers expect. To make electric-drive vehicles that are attractive to consumers, the batteries that power those cars need to be affordable, high-performing, long-lasting, and operate at maximum efficiency in a wide range of driving conditions and climates. The next generation of electric-drive cars and light trucks will be required to travel farther on electric power alone, placing greater energy demands on the vehicles' battery packs. As the packs get larger, regulating battery temperatures become even more important in helping improve performance, lifespan, safety and affordability. The best tool automakers have for assessing thermal control and optimizing battery performance is NREL's LVBC. "NREL's large-volume battery calorimeter is the first system large enough and accurate enough to test the whole battery systems for electric vehicles," says Dr. Said Al-Hallaj, chairman and CEO of AllCell, a major battery integrator. "We strongly believe that this leading-edge instrument is critical in developing the battery management system of the next generation of electric vehicles." "Larger and more advanced versions of the lithium ion battery technology that powers laptops are the next wave in energy storage for plug-in hybrid and all-electric vehicles. High temperatures shorten the life of lithium ion batteries, while cold temperatures diminish lithium ion batteries' power capabilities and hurt overall vehicle performance. NREL's LVBC is the only calorimeter capable of accurately quantifying the heat generation and efficiency of these lithium ion batteries," said NREL Principal Engineer Ahmad Pesaran, who leads the vehicle Energy Storage projects.

### U.S. Government Backs Concentrated Photovoltaics

*A 30-megawatt plant will be one of the largest to use the technology.*

[MIT Technology Review, May 12] A relatively new type of solar power called concentrated photovoltaic (CPV) technology is getting a $90.6 million boost in the form of a conditional loan guarantee from the U.S. Department of Energy. The government backing will help with financing for a 30-megawatt facility near Alamosa, Colorado, which will be one of the largest concentrated-photovoltaics plants ever built. The project is part of a surge in photovoltaic projects in the United States over the last few years. A total of 878 megawatts' worth of solar panels were installed last year, up from just 79 megawatts in 2005. This year total installation is expected to double 2010 levels, according to the Solar Energy Industries Association. The industry is starting to approach the scale of the wind industry, which saw over 5,000 megawatts of capacity installed last year (down from over 10,000 the year before). Concentrated photovoltaics is different from concentrated solar power, which is also known as solar thermal. In solar thermal plants, mirrors and lenses concentrate sunlight to generate the temperatures needed to produce steam that drives a turbine and generator.

### Wind Growth Down, Solar Up, FERC Reports

[Energy Prospects West, May 10] Wind-generation growth fell in 2010, but solar-capacity growth surged, FERC said in its annual State of the Markets report, released April 21. FERC said slightly more than 5,000 MW of wind capacity was installed in 2010, about half the rate of 2009. FERC attributed the slowdown to lower natural gas prices. In contrast, grid-connected solar-photovoltaic capacity grew by 883 MW in 2010, double the growth in

2009, while solar-thermal grew by 77 MW, bringing total grid-connected solar capacity to more than 2,000 MW. FERC linked the solar surge to state and federal incentives, and a 21-percent drop in system costs.

## GASOLINE AND DIESEL FUEL

To view Arizona and U.S. Gasoline and Diesel fuel data plus other pertinent oil information click here.
http://www.azcommerce.com/Energy/MotorFuel/

## GRANTS

The RFPs created or supplemented as a result of the American Recovery and Reinvestment Act (Recovery Act) are identified in the RFP titles.

The following solicitations are now available:

**NEW! Geothermal Technology Advancement**
The U.S. Department of Energy announces its intent to request proposals for Geothermal Technology Advancement for Rapid Development of Resources in the U.S. Areas of interest include: Advanced Exploratory Drilling Technologies; Advanced Well Completion Technologies; Zonal Isolation; Observation Tools and Data Collection System for Reservoir Stimulation; Geophysical Exploration Technologies; and Geochemistry/Rock-Fluid Interactions. The RFP will be issued on or about early June 2011, and will be posted at: https://eere-exchange.energy.gov/. For more info, go to: https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000547&agency=DOE. Refer to Sol# DE-FOA-0000547. (Grants.gov 5/6/11)

**NEW! Environmental Health Policies**
The U.S. Department of Health & Human Services, Centers for Disease Control and Prevention, request proposals to Strengthen and Improve the Nation's Environmental Public Health Capacity through National, Non-Profit, Professional Public Health Organizations to Incorporate Health in All Policies. The purpose of this program is to strengthen the nation's capacity to promote healthy and safe environments and prevent harmful exposures through education and training of decision-makers and key stakeholders. $2 million expected to be available, up to 4 awards anticipated. Letters of Intent are requested, but not required, and are due 5/17/11, final proposals due 6/16/11. For more info, contact Radha Pennotti at IZQ7@cdc.gov or go to: http://www.grants.gov/search/search.do?mode=VIEW&oppId=91213. Refer to Sol# CDC-RFA-EH11-1110. (Grants.gov 5/2/11)

**NEW! Plants Engineered to Replace Oil**
The U.S. Department of Energy requests proposals for Plants Engineered to Replace Oil. Through this RFP, DOE seeks to fund technologies that optimize the biochemical processes of energy capture and conversion to develop robust, farm-ready crops that deliver more energy per acre with less processing prior to the pump. $30 million expected to be available, up to 8 awards anticipated. Concept Papers are required, and are due 5/19/11, final proposal due date TBD. For more info, contact ARPA-E-CO@hq.doe.gov or go to: https://arpa-e-foa.energy.gov/. Refer to Sol# DE-FOA-0000470. (Grants.gov 4/20/11)

**NEW! Solar Agile Delivery of Electrical Power Technology**
The U.S. Department of Energy request proposals for Solar Agile Delivery of Electrical Power Technology. This RFP is primarily focused on the development of advanced component technologies, converter architectures, and packaging and manufacturing processes with the potential to improve the performance and lower the cost of photovoltaic systems. $10 million expected to be available, up to 5 awards anticipated. Concept Papers are required, and are due 5/19/11, final proposal due date TBD. For more info, contact ARPA-E-CO@hq.doe.gov or go to: https://arpa-e-foa.energy.gov/. Refer to Sol# DE-FOA-0000474. (Grants.gov 4/20/11)

**NEW! Green Electricity Network**
The U.S. Department of Energy requests proposals for Green Electricity Network Integration. Through this RFP, DOE will support innovative control software and high-voltage hardware to reliably control the grid network, specifically: 1) Cost-optimizing controls able to manage sporadically available sources, such as wind and solar, alongside coal and nuclear, and 2) Resilient power flow control hardware – or the energy equivalent of an internet router – to enable automated, real-time control of grid components. $30 million expected to be available, up to 14 awards anticipated. Concept Papers are required, and are due 5/19/11, final proposal due date TBD. For more info, contact ARPA-E-CO@hq.doe.gov or go to: https://arpa-e-foa.energy.gov/.
Refer to Sol# DE-FOA-0000473. (Grants.gov 4/20/11)

**NEW! Advanced Thermal Storage**
The U.S. Department of Energy requests proposals for High Energy Advanced Thermal Storage. Through this RFP, DOE seeks the development of revolutionary cost-effective thermal energy storage technologies in three focus areas: 1) High temperature storage systems to deliver solar electricity more efficiently around the clock and allow nuclear and fossil baseload resources the flexibility to meet peak demand, 2) Fuel produced from the sun's heat, and 3) HVAC systems that use thermal storage to dramatically improve the driving range of electric vehicles. $30 million expected to be available, up to 20 awards anticipated. Concept Papers are required, and are due 5/19/11, final proposal due date TBD. For more info, contact ARPA-E-CO@hq.doe.gov or go to: https://arpa-e-foa.energy.gov/. Refer to Sol# DE-FOA-0000471. (Grants.gov 4/20/11)

**Siting Renewables**
The U.S. Environmental Protection Agency requests proposals for RE-Powering America's Land: Siting Renewable Energy on Potentially Contaminated Land and Mine Sites. Through this initiative, EPA will support NREL-conducted feasibility studies to evaluate the potential development of renewable energy on potentially or formerly contaminated properties. Up to 20 studies are anticipated. Responses due 5/20/11. For more info, contact Lura Matthews at Matthews.Lura@epa.gov or go to: http://www.epa.gov/renewableenergyland/.

**NEW! PV Spectral Response Measurement System**
The U.S. Department of Commerce, National Institute of Standards and Technology, seek quotes for a Solar Cell Spectral Response Measurement System. This system will be used to by NIST to reduce the uncertainty of its current, in-house PV measurement capability. Responses due 5/25/11. For more info, contact Joshua Holliday at joshua.holliday@nist.gov or go to:
https://www.fbo.gov/?s=opportunity&mode=form&id=d66aef6eb8759029db98d8e1a0d9dac9&tab=core&_cview=0.
Refer to Sol# SB1341-11-RQ-0213. (FBO 5/13/11)

**NEW! Canola Production**
The U.S. Department of Agriculture requests proposals for the Supplemental and Alternative Crops Competitive Grants Program. This RFP will support the significant increase of canola crop production and/or acreage by development and testing of superior germplasm, methods of planting, cultivation, harvesting, and then transferring new knowledge to producers. $800K expected to be available, up to 5 awards anticipated. Responses due 5/31/11. For more info, contact James Parochetti at jparochetti@nifa.usda.gov or go to:
http://www.grants.gov/search/search.do?mode=VIEW&oppId=89693.
Refer to Sol# USDA-NIFA-OP-003439. (Grants.gov 4/25/11)

**Biomass R&D**
The U.S. Department of Agriculture and the U.S. Department of Energy request proposals for the Biomass Research and Development Initiative. Projects must integrate the following technical areas: Feedstocks development; Biofuels and biobased products development; and Biofuels and biobased products development analysis. Alongside integration of these areas, USDA specifically seeks farm and industrial demonstration(s) and analysis of using biodiesel to improve commercial grain and cellulosic ethanol production systems. Up to $30 million expected to be available, up to 8 awards anticipated. Pre-applications are required and are due 5/31/11, final proposals, by invitation, due 10/4/11. For more info, contact fy11brdi@go.doe.gov or go to:
https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000510&agency=DOE.
Refer to Sol# DE-FOA-0000510. (Grants.gov 4/15/11)

**NEW! Tracking Public Health**
The U.S. Department of Health & Human Services, Centers for Disease Control and Prevention, request proposals for National Environmental Public Health Tracking Program-Network Implementation. Through this RFP, CDC seeks to establish and maintain a nationwide tracking network to obtain integrated health and environmental data and use it to provide information in support of actions that improve the health of communities. $45 million expected to be available, up to 17 awards anticipated. Responses due 6/3/11. For more info, go to: http://www.grants.gov/search/search.do?mode=VIEW&oppId=90794. Refer to Sol# CDC-RFA-EH11-1103. (Grants.gov 5/2/11)

**NEW! Energy Research**
The U. S. Department of Energy requests proposals for the Experimental Program to Stimulate Competitive Research Implementation Awards, for projects that improve research infrastructure in energy-related areas identified by participating state EPSCoR governing committees. $4 million expected to be available, up to 2 awards anticipated. Letters of Intent are requested, but not required, and are due 6/7/11, final proposals due 6/23/11. For more info, including participating states, contact Tim Fitzsimmons at

tim.fitzsimmons@science.doe.gov or go to: https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000546&agency=DOE. Refer to Sol# DE-FOA-0000546. (Grants.gov 5/13/11)

**NEW! International Industrial Energy Efficiency**
The U.S. Department of Energy requests proposals for International Industrial Energy Efficiency Training and Deployment. This RFP will support the development of U.S. international training capabilities in energy efficiency and management in key manufacturing sectors (such as aluminum, steel and cement) worldwide, including the performance of assessments of energy facilities. $1 million expected to be available, up to 2 awards anticipated. Letters of Intent are requested, but not required, and are due 6/8/11, final proposals due 6/16/11. For more info, go to: https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000531&agency=DOE. Refer to Sol# DE-FOA-0000531. (Grants.gov 5/11/11/)

**NEW! PV Market Barriers and Non-Hardware Costs**
The U.S. Department of Energy requests proposals for the SunShot Initiative: Reducing Market Barriers and Non-Hardware Balance of System Costs. Through this RFP, DOE seeks to significantly reduce market barriers and the balance of system non-hardware cost components of PV systems. Areas of interest include: Codes, Standards and Processes; Software Design Tools and Databases; and Regulatory and Utility Solutions. Up to $15 million expected to be available, up to 10 awards anticipated. Letters of Intent are required and are due 6/9/11, final proposals due 6/23/11. For more info, contact nhbos@go.doe.gov or go to: https://eere-exchange.energy.gov/. Refer to Sol# DE-FOA-0000520. (Grants.gov 5/6/11)

**Healthy Homes Program**
The U.S. Department of Housing & Urban Development requests proposals for the Healthy Homes Production Program. This program supports projects that identify and correct significant housing-related health and safety hazards in privately owned, low-income rental or owner occupied housing. HUD is especially interested in projects that integrate healthy homes practices into existing housing rehabilitation, property maintenance, weatherization, energy efficiency improvements, and other housing improvement programs. Funding and estimated number of awards TBD by 2011 appropriation. Responses due 6/9/11. For more info, contact Michelle Miller at Michelle.M.Miller@HUD.gov or go to: http://www.grants.gov/search/search.do?mode=VIEW&oppId=86573. Refer to Sol# FR-5500-N-03. (Grants.gov 4/8/11)

**U.S. Offshore Wind: Removing Market Barriers**
The Department of Energy's (DOE) Energy Efficiency and Renewable Energy Program will be issuing Funding Opportunity Announcement (FOA) number DE-FOA-0000414, U.S. Offshore Wind: Removing Market Barriers. This FOA will fund research activities to address market barriers limiting the deployment of offshore wind energy projects in the United States. These activities will fall within the following Topic Areas: Topic Area 1: Offshore Wind Market and Economic Analysis Topic Area 2: Environmental Risk Reduction Topic Area 3: Manufacturing and Supply Chain Development Topic Area 4: Transmission Planning and Interconnection Studies Topic Area 5: Optimized Infrastructure and Operations Topic Area 6: Resource Characterization and Design Conditions Topic Area 7: Impact on Electronic Equipment in the Marine Environment Within the defined topic areas, DOE will fund specific social, environmental and technical analysis, as well as engineering and planning activities required to complete the proposed scope of work. Response Due Date: 6/10/2011 11:59:00 PM ES. Use the following link to view this opportunity: https://www.fedconnect.net/fedconnect?doc=DE-FOA-0000414&agency=DOE
Reference Number: DE-FOA-0000414

**NEW! Clean Cities - Plug-In Electric Vehicles and Charging Infrastructure**
The U.S. Department of Energy requests proposals for Clean Cities Community Readiness and Planning for Plug-In Electric Vehicles and Charging Infrastructure. This RFP will serve as a pilot program to stimulate community based electric vehicle infrastructure readiness planning and implementation activities in anticipation of larger electric vehicle deployment efforts in the future. $5 million expected to be available, up to 15 awards anticipated. Responses due 6/13/11. For more info, contact Sue Miltenberger at susan.miltenberger@netl.doe.gov or go to: https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000451&agency=DOE.
Refer to Sol# DE-FOA-0000451. (Grants.gov 4/19/11)

**Development of Standards for Electronic Products**
The U.S. Environmental Protection Agency requests proposals to Develop Standards for Environmentally Preferable Electronic Products. This RFP will support studies, training and technical assistance necessary to develop two voluntary consensus standards that will be published as American National Standards for environmentally preferable electronic products using a standards process accredited by the American National Standards Institute. $500K expected to be available, up to 1 award anticipated. Responses due 6/14/11. For

more info, contact Beth Anderson at anderson.beth@epa.gov or go to: http://www.epa.gov/opptintr/p2home/. Refer to Sol# EPA-HQ-OPPT-2011-01. (Grants.gov 4/13/11)

**NEW! Rural Renewable Systems and Energy Efficiency Improvements**
The U.S. Department of Agriculture requests proposals for Rural Energy for America Program - Renewable Energy Systems and Energy Efficiency Improvements and Guaranteed Loans. This program will provide grants and loans to agricultural producers and rural small businesses to install renewable energy systems and energy efficiency improvements. More than $51 million expected to be available, individual awards NTE $500K. Responses due 6/15/11. For more info, go to: http://www.grants.gov/search/search.do?mode=VIEW&oppId=92653. Refer to Sol# RDBCP-11-REAP-RES-EEI. (Grants.gov 5/9/11)

**Generating Employment Opportunities**
The eBay Foundation and Changemakers request proposals for the Powering Economic Opportunity: Create a World that Works competition. This initiative will support innovative market-based approaches to creating economic opportunity and generating employment for disadvantaged populations. $250K expected to be available, individual awards $50K each. Responses due 6/15/11. For more info, go to: http://www.changemakers.com/en-us/economicopportunity. (Foundation Center RFP Bulletin 4/15/11)

**NEW! Open Manufacturing**
The Defense Advanced Research Projects Agency requests proposals for Open Manufacturing. This program supports the development and demonstration of technologies that reduce impediments to the efficient manufacturing of affordable, competitive products that rapidly enter into service at low fiscal and environmental costs. Responses due 6/23/11. For more info, go to: http://www.darpa.mil/Opportunities/Solicitations/DSO_Solicitations.aspx. Refer to Sol# DARPA-BAA-11-54. (Grants.gov 5/5/11)

**Next Generation Photovoltaics**
The U.S. Department of Energy requests proposals for Transformational PV Science and Technology: Next Generation Photovoltaics II. Through this RFP, DOE seeks revolutionary, exploratory research to create highly disruptive solar PV technologies that will meet $1 per watt and lower installed system cost targets beyond the end of this decade. Up to $30 million expected to be available, up to 30 awards anticipated. Pre-proposals due 5/9/11, final proposals, by invitation, due 6/23/11. For more info, contact pvbos@go.doe.gov or go to: https://eere-exchange.energy.gov/. Refer to Sol# DE-FOA-0000387. (Grants.gov 4/8/11)

**NEW! Healthy Homes Technical Studies**
The U.S. Department of Housing and Urban Development requests proposals for Healthy Homes Technical Studies. Through this RFP, HUD will support studies to improve knowledge, assessment and control of lead-based paint and other housing-related health and safety hazards. Areas of interest include: Take-home hazards from work/hobbies and work at home; mold and moisture; allergens and asthma; asbestos; combustion products of heating and cooking appliances; semi-volatile organic compounds; unintentional injuries/fire; secondhand smoke; insect and rodent pests; lead-based paint; pesticide residues; and radon progeny. $2 million expected to be available, up to 4 awards anticipated. Responses due 6/30/11. For more info, contact Peter Ashley at Peter.J.Ashley@hud.gov or go to: http://www.grants.gov/search/search.do?mode=VIEW&oppId=91194. Refer to Sol# FR-5500-N-15B. (Grants.gov 5/2/11)

**NEW! Lead Technical Studies**
The U.S. Department of Housing and Urban Development requests proposals for Lead Technical Studies. This program will support research to improve the efficacy and cost-effectiveness of methods for evaluation and control of residential lead-based paint hazards. $500K expected to be available, up to 2 awards anticipated. Responses due 6/30/11. For more info, contact Peter Ashley at Peter.J.Ashley@hud.gov or go to: http://www.grants.gov/search/search.do?mode=VIEW&oppId=91193. Refer to Sol# FR-5500-N-15A. (Grants.gov 5/2/11)

**Strategic Energy Technologies**
The Defense Advanced Research Projects Agency has issued a Broad Agency Announcement for Strategic Technologies. Areas of interest include, but are not limited to: Energy and Self-Sufficient Operations: Novel low weight/high efficiency power generator technologies; Power harvesting technologies and devices; Energy-related power systems and portable power technologies; Geothermal energy systems; Large scale efficient energy storage; Large scale efficient hydrogen storage; Regenerative or reverse solid oxide fuel cells; and Fuel flexible generators. Responses accepted to 9/7/11. For more info, contact baa10-83@darpa.mil or go to:

https://www.fbo.gov/index?s=opportunity&mode=form&id=cde78be045531bd608d217cb3c4cf663&tab=core&_cview=0. Refer to Sol# DARPA-BAA-10-83. (Grants.gov 2/9/11)

**U.S. DOE Office of Science**
The U.S. Department of Energy, Office of Science, announces its continuing interest in receiving New and Renewal-Supplemental Applications for the Office of Science Grants and Cooperative Agreements. Areas of interest include, but are not limited to: Basic Energy Sciences, Biological and Environmental Research, and Advanced Scientific Computing. Subtopics include, but are not limited to: Materials Science, Solar Photochemistry, and Climate and Environmental Sciences. $800 million expected to be available. Proposals accepted through 9/30/11. For more info on new grants, go to:
https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000411&agency=DOE.
Refer to Sol# DE-FOA-0000411. For more info on Renewal-Supplemental grants, go to:
https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000412&agency=DOE.
Refer to Sol# DE-FOA-0000412. (Grants.gov 9/30/10)

**Broad R&D Announcement**
The U.S. Army Engineer Research and Development Center has issued a Broad Agency Announcement for various R&D topic areas. Areas of interest include, but are not limited to: Energy, facilities maintenance, materials and structures, engineering processes, environmental processes, land and heritage conservation, and ecological processes. Up to 10 awards anticipated. Responses due 1/31/12. For more info, contact Allison Hudson at Allison.B.Hudson@usace.army.mil or go to:
http://www.grants.gov/search/search.do?mode=VIEW&oppId=63113.
Refer to Sol# W912HZ11BAA02. (Grants.gov 1/11/11)

**U.S. Navy Energy Conservation Projects**
The Naval Surface Warfare Center has issued a Broad Agency Announcement for White Papers that address Energy Conservation Applications for the U.S. Navy. This BAA solicits innovative concepts for Navy shipboard energy conservation and carbon footprint reduction with the potential for rapid transition to Fleet operation. The target segment of the Fleet is the ships operated by Military Sealift Command. Responses accepted to 10/31/12. The selection of one or more sources for full proposals and potential contract award will be based on responses to the BAA and the peer review process. For more info, contact Jamie Mattern at james.g.mattern1@navy.mil or go to:
https://www.fbo.gov/?s=opportunity&mode=form&id=f4ea9da536f0413f20b80d9f02707b7e&tab=core&_cview=0.
Refer to BAA# N00167-11-BAA-01. (FBO 11/3/10)

**Agriculture and Food Research - Climate Change**
The U.S. Department of Agriculture requests proposals for the Agriculture and Food Research Initiative (AFRI) - Climate Change. The AFRI Climate Change Program will fund projects focused on reducing greenhouse gas emissions and increasing carbon sequestration in agricultural and forest production systems and preparing the nation's agriculture and forests to adapt to changing climates. The RFP is posted at:
http://nifa.usda.gov/funding/rfas/afri_rfa.html. Refer to Sol# USDA-NIFA-AFRI-003038. (Grants.gov 3/22/10)

**Agriculture and Food Research Initiative - Sustainable Bioenergy**
The U.S. Department of Agriculture requests proposals for the Agriculture and Food Research Initiative (AFRI) – Sustainable Bioenergy. This program will support projects that target the development of regional systems for the sustainable production of bioenergy and biobased products that: contribute significantly to reducing dependence on foreign oil; have net positive social, environmental, and rural economic impacts; and are compatible with existing agricultural systems. The RFP is posted at: http://nifa.usda.gov/funding/rfas/afri_rfa.html.
Refer to Sol# USDA-NIFA-AFRI-003042. (Grants.gov 3/22/10)

**Agriculture & Food Research Initiative - Foundational Programs**
The U.S. Department of Agriculture requests proposals for the Agriculture and Food Research Initiative – Foundational Programs. The Foundation Programs support research, education, and extension as well integrated programs that address key problems of national, regional, and multi-state importance in sustaining all components of agriculture. Areas of interest include, but are not limited to: Renewable energy, natural resources, and environment; Agriculture systems and technology; and Agriculture economics and rural communities. $78 million expected to be available, up to 420 awards anticipated. Contact info and due dates vary by subject area. For more info, go to: http://www.nifa.usda.gov/funding/rfas/afri_rfa.html.
Refer to Sol# USDA-NIFA-AFRI-003397. (Grants.gov 1/7/11)

**Special thanks to the Washington State University Extension Energy Program for collecting this information.**

## Arizona Funding Opportunities – Program Descriptions

**Arizona Commerce Authority (ACA)**

- Angel Investment Tax Credit Program offers an Arizona income tax credit to "qualified investors" who invest in early-state "qualified small businesses." The income tax credit is equal to 30% of the investment amount, increasing to 35% for investments in "bioscience enterprises" and in companies located in rural Arizona. Investors ® click here for application materials. Small Businesses ® click here for application materials. **Deadline: Year Round**

- Enterprise Zone Program offers two benefits to businesses located within a designated enterprise zone; tax credits and property tax reduction.
  1. The tax credit program provides non-retail businesses up to $3,000 for each net new employee. For tax credit information ® click here. **Deadline: The earlier of either six months after the company's tax year end or before filing with Revenue, whichever comes first.**
  2. The property tax reduction can reduce manufacturing or commercial printing businesses property taxes by approximately 40-60%. For property tax reduction information ® click here. **Deadline: October 1st of each year**

- Renewable Energy Tax Incentive Program offers a refundable income tax credit and property tax reduction to companies in solar, wind, geothermal and other renewable energy industries who are expanding or locating a manufacturing or headquarters operation in Arizona. The tax credit is up to 10% of the total qualified investment amount and the property tax benefit can reduce a company's property taxes by up to 75%. **Deadline: Year Round**